

**CLAIMS:**

- 1     **1.**     An apparatus for implementing a Floating-Point  
 2     related application, comprising:  
 3         a tool that includes:  
 4             a receiver for receiving a list of commands in a  
 5     computer language; the language defining Floating-Point  
 6     events of interest in respect of at least one FP  
 7     instruction;  
 8         a parser for parsing the commands;  
 9         a processor configured to process at least the  
 10     parsed commands for realizing the floating-point  
 11     related application on the basis of said events.
- 1     **2.**     The apparatus of Claim 1, wherein said language  
 2     further defining regrouping of the events into at least  
 3     one coverage model; and wherein said processor is  
 4     configured to process the parsed commands for realizing  
 5     the floating-point related application on the basis of  
 6     said events and said at least one coverage model.
- 1     **3.**     The apparatus according to Claim 1, wherein said  
 2     application is an evaluation of coverage of tests being  
 3     run on a design.
- 1     **4.**     The apparatus according to Claim 1, wherein said  
 2     processor is configured to generate a sequence of test  
 3     vectors for verification of Floating-Point module  
 4     operation; the test vectors meet the constraints of said  
 5     events.
- 1     **5.**     The apparatus according to Claim 4, wherein said  
 2     verification includes verifying if the Floating-Point  
 3     operation complies with IEEE standard for Floating-Point.
- 1     **6.**     For use with the Floating-Point module of Claim 1,  
 2     a computer language; the language defining Floating-Point  
 3     events of interest in respect of at least one FP  
 4     instruction.

1 7. The computer language of Claim 6, further defining  
2 regrouping of the events into at least one coverage model.

1 8. An apparatus for implementing a Floating-Point  
2 related application, comprising:

3 a tool that includes:

4 a receiver for receiving a list of commands in a  
5 computer language; the language defining Floating-Point  
6 events of interest and regrouping of events into at least  
7 one coverage model, in respect of at least one FP  
8 instruction; the coverage model having the form of a  
9 sequence of Floating-Point commands with constraints on  
10 (i) at least one intermediate result operand of the FP  
11 instruction, and (ii) result operand of the FP  
12 instruction;

13 a parser for parsing the commands;

14 a processor for processing at least the parsed  
15 commands for realizing the Floating -point related  
16 application at least on the basis of said events and  
17 said at least one coverage model.

1 9. The apparatus according to Claim 8, wherein said  
2 application is an evaluation of coverage of tests being  
3 run on a design.

1 10. The apparatus according to Claim 8, wherein said  
2 processor is configured to generate a sequence of test  
3 vectors for verification of Floating-Point module  
4 operation; the test vectors meet the constraints of said  
5 events and the at least one coverage model.

1 11. The apparatus according to Claim 8, wherein said  
2 verification includes verifying if the Floating-Point  
3 operation complies with the IEEE standard for  
4 Floating-Point.

5 12. For use with the Floating-Point module of Claim 8, a  
6 computer language; the language defining Floating-Point  
7 events of interest and regrouping of events into at least

8 one coverage model, in respect of at least one FP  
9 instruction, the coverage model having the form of a  
10 sequence of Floating-Point commands with constraints on  
11 (i) at least one intermediate result operand of the FP  
12 instruction, and (ii) result operand of the FP  
13 instruction.

1 ~~13.12.~~ An apparatus for implementing a Floating-Point  
2 related application, comprising:

3 a tool that includes:

4 a receiver for receiving a list of commands in a  
5 computer language; the language defining Floating-Point  
6 events of interest and regrouping of events into at least  
7 one coverage model, in respect of at least one FP  
8 instruction; the coverage model having the form of a  
9 sequence of Floating-Point commands with constraints on  
10 (i) at least one intermediate result operand of the FP  
11 instruction, and (ii) result operand of the FP  
12 instruction; each one of said constraints is expressed as  
13 at least one set each of which defining allowable  
14 Floating-Point numbers;

15 a parser for parsing the commands;

16 a processor for processing at least the parsed  
17 commands for realizing at least on the basis of said  
18 events and said at least one coverage model the Floating-  
19 -point related application.

1 14. The apparatus according to Claim 13, wherein said  
2 application is an evaluation of coverage of tests being  
3 run on a design.

1 15. The apparatus according to Claim 13, wherein said  
2 processor is configured to generate a sequence of test  
3 vectors for verification of Floating-Point module  
4 operation; the test vectors meet the constraints of said  
5 events and at least one coverage model.

1 16. The apparatus according to Claim 13, wherein said  
2 verification includes verifying if the Floating-Point

0957457-001301

3 operation complies with the IEEE standard for  
4 Floating-Point.

1 17. For use with the Floating-Point module of Claim 13,  
2 a computer language; the language defining Floating-Point  
3 events of interest and regrouping of events into at least  
4 one coverage model, in respect of at least one FP  
5 instruction; the coverage model having the form of a  
6 sequence of Floating-Point commands with constraints on:  
7 (i) at least one intermediate result operand of the FP  
8 instruction, and (ii) result operand of the FP  
9 instruction; each one of said constraints is expressed as  
10 at least one set each of which defining allowable  
11 Floating-Point numbers.

1 18. The apparatus according to Claim 1, wherein said list  
2 of commands includes: Range of FP numbers ; Mask on bits  
3 of FP number; Set or Reset Number of Bits in an FP  
4 number; Set or Reset Continuous-Bit-Long in an FP number;  
5 Relative Values of at least two FP numbers, and logical  
6 operations among said commands.

1 19. The apparatus according to Claim 6, wherein said list  
2 of commands includes: Range of FP numbers ; Mask on bits  
3 of FP number; Set or Reset Number of Bits in an FP  
4 number; Set or Reset Continuous-Bit-Long in an FP number;  
5 Relative Values of at least two FP numbers, and logical  
6 operations among said commands.

1 20. The apparatus according to Claim 7, wherein said list  
2 of commands includes: Range of FP numbers ; Mask on bits  
3 of FP number; Set or Reset Number of Bits in an FP  
4 number; Set or Reset Continuous-Bit-Long in an FP number;  
5 Relative Values of at least two FP numbers, and logical  
6 operations among said commands.

1 21. The apparatus according to Claim 8, wherein said list  
2 of commands includes: Range of FP numbers ; Mask on bits  
3 of FP number; Set or Reset Number of Bits in an FP  
4 number; Set or Reset Continuous-Bit-Long in an FP number;

5 Relative Values of at least two FP numbers, and logical  
6 operations among said commands.

1 22. The apparatus according to Claim 12, wherein said  
2 list of commands includes: Range of FP numbers ; Mask on  
3 bits of FP number; Set or Reset Number of Bits in an FP  
4 number; Set or Reset Continuous-Bit-Long in an FP number;  
5 Relative Values of at least two FP numbers, and logical  
6 operations among said commands.

1 23. The apparatus according to Claim 13, wherein said  
2 list of commands includes: Range of FP numbers ; Mask on  
3 bits of FP number; Set or Reset Number of Bits in an FP  
4 number; Set or Reset Continuous-Bit-Long in an FP number;  
5 Relative Values of at least two FP numbers, and logical  
6 operations among said commands.

1 24. The apparatus according to Claim 17, wherein said  
2 list of commands includes: Range of FP numbers ; Mask on  
3 bits of FP number; Set or Reset Number of Bits in an FP  
4 number; Set or Reset Continuous-Bit-Long in an FP number;  
5 Relative Values of at least two FP numbers, and logical  
6 operations among said commands.

1 25. The apparatus according to Claim 8, wherein said  
2 constraints are further applied to attributes of Machine  
3 State.

1 26. The apparatus according to Claim 13, wherein said  
2 constraints are further applied to attributes of Machine  
3 State.

1 27. A method for implementing a Floating-Point related  
2 application that includes the steps of :

- 3 (i) receiving a list of commands in a computer  
4 language; the language defining Floating-Point  
5 events of interest in respect of at least one FP  
6 instruction;  
7 (ii) parsing the commands; and

09927457-081301

8 (iii) processing at least the parsed commands for  
9 realizing the floating-point related application  
10 on the basis of said events.

1 28. A method for implementing a Floating-Point related  
2 application that includes the steps of:

3 (i) receiving a list of commands in a computer  
4 language; the language defining Floating-Point  
5 events of interest and regrouping of events into  
6 at least one coverage model, in respect of at  
7 least one FP instruction; the coverage model  
8 having the form of a sequence of Floating-Point  
9 commands with constraints on (i) at least one  
10 intermediate result operand of the FP instruction,  
11 and (ii) result operand of the FP instruction;

12 (ii) parsing the commands; and

13 (iii) processing at least the parsed commands for  
14 realizing the Floating -point related application  
15 at least on the basis of said events and said at  
16 least one coverage model.

1 29. A method for implementing a Floating-Point  
2 related application, that includes the step of:

3 (i) receiving a list of commands in a computer  
4 language; the language defining Floating-Point  
5 events of interest and regrouping of events into  
6 at least one coverage model, in respect of at  
7 least one FP instruction; the coverage model  
8 having the form of a sequence of Floating-Point  
9 commands with constraints on (i) at least one  
10 intermediate result operand of the FP instruction,  
11 and (ii) result operand of the FP instruction;  
12 each one of said constraints is expressed as at  
13 least one set each of which defining allowable  
14 Floating-Point numbers;

15 (ii) parsing the commands; and

16           (iii)       processing at least the parsed commands for  
17           realizing at least on the basis of said events and  
18           said at least one coverage model the Floating  
19           -point related application.

1       30.     A program storage device readable by machine,  
2     tangibly embodying a program of instructions executable by  
3     the machine to perform method steps for implementing a  
4     Floating-Point related application that includes the steps  
5     of :

6           (i)     receiving a list of commands     in a computer  
7           language; the language defining Floating-Point  
8           events of interest in respect of at least one FP  
9           instruction;

10          (ii)    parsing the commands; and

11          (iii)   processing at least the parsed commands for  
12          realizing the floating-point related application  
13          on the basis of said events.

1       31.     A computer program product comprising a computer  
2     useable medium having computer readable program code  
3     embodied therein for causing the computer to implement a  
4     Floating-Point related application, comprising:

5           computer readable program code for causing the  
6     computer to   receive a list of commands   in a computer  
7     language; the language defining Floating-Point events of  
8     interest in respect of at least one FP instruction;

9           computer readable program code for causing the  
10    computer to   parse the commands; and

11          computer readable program code for causing the  
12    computer to   process at least the parsed commands for  
13    realizing the floating-point related application on the  
14    basis of said events.

1       32.     A program storage device readable by machine,  
2     tangibly embodying a program of instructions executable by  
3     the machine to perform method steps for implementing a

4 Floating-Point related application, that includes the  
5 steps of:

6 (i) receiving a list of commands in a computer  
7 language; the language defining Floating-Point  
8 events of interest and regrouping of events into  
9 at least one coverage model, in respect of at  
10 least one FP instruction; the coverage model  
11 having the form of a sequence of Floating-Point  
12 commands with constraints on (i) at least one  
13 intermediate result operand of the FP instruction,  
14 and (ii) result operand of the FP instruction;  
15 each one of said constraints is expressed as at  
16 least one set each of which defining allowable  
17 Floating-Point numbers;

18 (ii) parsing the commands; and

19 (iii) processing at least the parsed commands for  
20 realizing at least on the basis of said events and  
21 said at least one coverage model the Floating  
22 -point related application.

1 33. A computer program product comprising a computer  
2 useable medium having computer readable program code  
3 embodied therein for causing the computer to implement a  
4 Floating-Point related application, comprising:

5 computer readable program code for causing the  
6 computer to receive a list of commands in a computer  
7 language; the language defining Floating-Point events of  
8 interest and regrouping of events into at least one  
9 coverage model, in respect of at least one FP instruction;  
10 the coverage model having the form of a sequence of  
11 Floating-Point commands with constraints on (i) at least  
12 one intermediate result operand of the FP instruction, and  
13 (ii) result operand of the FP instruction; each one of  
14 said constraints is expressed as at least one set each of  
15 which defining allowable Floating-Point numbers;



16 computer readable program code for causing the  
17 computer to parse the commands; and

18 computer readable program code for causing the  
19 computer to process at least the parsed commands for  
20 realizing at least on the basis of said events and said  
21 at least one coverage model the Floating-point related  
22 application.

1     **34.**     A program storage device readable by machine,  
2     tangibly embodying a program of instructions executable by  
3     the machine to perform method steps for implementing a  
4     Floating-Point related application, that includes the  
5     steps of:

6           (i) receiving a list of commands in a computer  
7           language; the language defining Floating-Point  
8           events of interest and regrouping of events into  
9           at least one coverage model, in respect of at  
10          least one FP instruction; the coverage model  
11          having the form of a sequence of Floating-Point  
12          commands with constraints on (i) at least one  
13          intermediate result operand of the FP instruction,  
14          and (ii) result operand of the FP instruction;  
15          each one of said constraints is expressed as at  
16          least one set each of which defining allowable  
17          Floating-Point numbers;

18           (ii) parsing the commands; and

19           (iii)       processing at least the parsed commands for  
20           realizing at least on the basis of said events and  
21           said at least one coverage model the Floating  
22           -point related application.

1       **35.**       A computer program product comprising a computer  
2       useable medium having computer readable program code  
3       embodied therein for causing the computer to implement a  
4       Floating-Point related application, comprising:

5 computer readable program code for causing the  
6 computer to receive a list of commands in a computer

7 language; the language defining Floating-Point events of  
8 interest and regrouping of events into at least one  
9 coverage model, in respect of at least one FP instruction;  
10 the coverage model having the form of a sequence of  
11 Floating-Point commands with constraints on (i) at least  
12 one intermediate result operand of the FP instruction, and  
13 (ii) result operand of the FP instruction; each one of  
14 said constraints is expressed as at least one set each of  
15 which defining allowable Floating-Point numbers;

16 computer readable program code for causing the  
17 computer to parse the commands; and

18 computer readable program code for causing the  
19 computer to process at least the parsed commands for  
20 realizing at least on the basis of said events and said  
21 at least one coverage model the Floating -point related  
22 application.

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